

USSR

UDC 581.2

MOSKOVETS', S. M.; SKRYPAL', I. G.; Institute of Microbiology
and Virology, Academy of Sciences Ukrainian SSR

"Mycoplasma as Agents of Plant Diseases"

Kiev, Mikrobiologicheskii Zhurnal, Vol 33, No 3, May/Jun 71,
pp 381-390

Abstract: The role of Mycoplasma in the pathogenesis of a number of diseases affecting apple, tomato, onion, carrot, clover, and other plants is discussed. The damage caused by these diseases is considerable, on occasion incurring losses equalling 45-100% of the crops. The history of the study of phytopathogenic Mycoplasma is given and a description of their biological and morphological characteristics. Topics for further study of these microorganisms are outlined. The study of Mycoplasma received its greatest impetus at a conference held in May 1966 at the New York Academy of Sciences, where a permanent International Committee on the Nomenclature of Bacteria was appointed.

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MOSKOVETS', S. M., et al, Mikrobiologicheskii Zhurnal, Vol 33,
No 3, May/Jun 71, pp 381-390

Guided by the latest results obtained in the study of Mycoplasma, the Subcommittee created in the order of Mycoplasmatales a new class of microorganisms named Mollicutes, a class parallel to that of Schizomycetes. The new class includes all of the microorganisms which are filterable, can be cultivated on noncellular media, are nonreverting, and differ biologically and morphologically from bacteria, rickettsia, protozoa, and viruses parasitic in tissues. The sensitivity of Mollicutes to dyes is extremely low; they are, however, readily discernible and contrast well in electron microscopic investigations. For this reason the method of electron microscopy is the main method of investigation of Mycoplasma today. The phytopathogenic Mycoplasma are highly polymorphic, with a reproduction cycle which is also highly heterogeneous. The mycoplasmic etiology of plant diseases as established by electron microscopy is based on the presence of mycoplasma-like bodies in diseased plants, and the absence of such bodies in healthy plants; the therapeutic effect of tetracycline on the affected plants; and the disappearance of the

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MOSKOVETS', S. M., et al, Mikrobiologicheskiy Zhurnal, Vol 33,
No 3, May/Jun 71, pp 381-390

mycoplasma-like bodies from plants treated with tetracycline. These conclusions, however, are not sufficient in themselves unless they are corroborated by Koch's postulates. These postulates have already been confirmed in the case of such plant diseases as sugarcane streak, maize stunt, and alfalfa mosaic.

Further tasks in connection with the study of Mycoplasma are differentiation and classification of the various species of these microorganisms, study of their physiological and biochemical characteristics, development of methods of analyzing their nucleic acids, and determination of their serological activity.

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USSR

UDC 582.232:547.963.32

MOSKOVETS', S. M., NESTEROVA, N. V., and MENDZHUL, M. I., Institute of Microbiology and Virology, Academy of Sciences Ukrainian SSR

"Isolation and Characteristics of DNA of the Blue-Green Algae *Anacystis nidulans*"

Kiev, Mikrobiologichnyi Zhurnal, Vol 33, No 1, Jan/Feb 71, pp 53-56

Abstract: The isolation of pure and high-molecular DNA from the single-cell alga *A. nidulans* was studied. This alga was selected because it lacks a capsule, is easy to cultivate, and for the principal reason that it is susceptible to virus infection, so that the latter can be studied on the basis of changes in the nucleic acid metabolism. Similarity of the structure of membranes of blue-green algae with those of Gram-negative bacteria made it possible to apply methods of degradation developed for the latter. Three methods of degradation were applied: 1) treatment with HClO_3 followed by that lysozyme; 2) heat treatment at 60° in a buffer solution in the presence of EDTA followed by treatment with lysozyme; 3) freezing with liquid N_2 followed by rapid thawing at 37° and treatment with lysozyme. Method (3) of destroy-
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MOSKOVETS', S. M., et al., Mikrobiologicheskii Zhurnal, Vol 33, No 1, Jan/Feb 71, pp 53-56

ing the membranes resulted in a greater yield of DNA with a higher molecular weight than methods (1) and (2). Deproteinization of the DNA was carried out by the procedure described by J. Marmur (J. Mol. Biol. 3, 203, 1961). Application of method (3) and of this procedure made it possible to obtain DNA with the high yield of 1.5 mg/g dry weight of the algae. The DNA had a protein content $< 1\%$; RNA and polysaccharides were absent. The characteristic viscosity of the DNA was 115 dl/g, corresponding to a molecular weight of 13 million.

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UDC 663.13.576.858.8

MOSKOVETS', S. M., KOVALENKO, O. G., and BOBYR, A. D., Institute of Microbiology and Virology, Academy of Sciences Ukrainian SSR

"Some Physical and Physico-Chemical Properties of Antiviral Products of Yeast Metabolism"

Kiev, Doklady Akademii Nauk Ukrainiskoy SSR, No 2, Jan 71, pp 172-174

Abstract: Physical and physico-chemical properties of antiviral substances in the yeast extract and culture fluid of *Candida tropicalis* 3B and *Candida arborea* KAM-1 were studied by subjecting them to the action of various factors, followed by testing their inhibitory activity against potato X-virus and tobacco mosaic virus. Biological activity of the viruses was determined by infecting indicator plants *Datura stramonium* L. and *Gomphrena globosa* L. It was determined that the substances studied are thermally stable (they are not deactivated by heating to 100°C for 10-15 min), do not penetrate through a cellophane membrane in the process of dialysis, and are not precipitated during ultracentrifugation in the range 100,000 -- 200,000 for 204 hrs. In ethanol these substances precipitate partially out of dilute solutions. Attempts to isolate inhibitors from the biological mixture by means of paper chromatography in the system n-butanol:acetic acid:water 1/2

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HOSKOVETS', S. M., et al., Doklady Akademii Nauk Ukrainskoy SSR, No 2,
Jan 71, pp 172-174

(4:1:5) and in 80% aqueous ethanol showed that the most active antiviral
fraction was found at the origin of the chromatographic strip or close to it.

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MOSKOVETS, S. N. (Deceased), SHERBAN, Ye. D., and OLEYNIK, A. N.

"Morphology of Wheat Streak Mosaic Virus Occurring in Moldavia"

Kishinev, Izvestiya Akademii Nauk Moldavskoy SSR, Seriya Biologicheskikh i Khimicheskikh Nauk, No 6, 1971, pp 30-34

Abstract: Wheat streak mosaic virus was found in recent years in various parts of the USSR — Krasnodarskiy Kray, Rostovskaya and Voronezhskaya oblasti, Uzbekistan, Kazakhstan, the Ukraine, and Moldavia. In Moldavia, streak mosaic is the commonest and most injurious disease of wheat. Electron-microscopic examination of preparations of partly purified virus isolated from infected plants revealed viral particles in the form of slightly bent filaments. Measurement of 107 such particles showed that they ranged in length from 725 to 775 mμ, the average being 736±1.69 mμ. Their diameter varied from 18 to 19 mμ. The viral particles found in diseased wheat plants on Moldavian fields are identical in shape and size to wheat streak mosaic virus occurring in other parts of the world.

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USSR

UDC 632.95

MOSKOVETS, S. N., KOVALENKO, A. G., CHERNETSKIY, V. P., Institute of Microbiology and Virusology imeni Academician D. K. Zabolotnyy

"A Method of Synthesizing a Complex of Physiologically Active Substances and Yeasts"

USSR Author's Certificate No 302368, filed 19 Jan 70, published 7 Oct 71 (from RZh-Khimiya, No 11, Jun 72, Abstract No 11N443)

Translation: To obtain a complex of physiologically active substances from yeasts which is better than *Candida tropicalis* 1b and *C. arborescens* KAM-1 in inhibiting the tobacco mosaic virus and the X-virus of potatoes, a culture fluid which has been pre-treated to remove yeast cells or yeast extract is concentrated to 1/10 the initial volume by vaporization under vacuum at 45°C or less and then centrifuged for 3-4 hours. The precipitate is discarded, and matter is precipitated from the supernatant liquid with 80% ethanol. The precipitate dissolved in water at 45°C or less is treated with ribonuclease (30 μ g/ml in 100 M NaCl, 2 hours at 25°C), then for 30 minutes with phenol (1:1) or with a phenol-chloroform mixture (9:1). The reaction mixture is centrifuged at 3000 G for 45-50 minutes, the phenol phase is discarded, and the aqueous phase is dialyzed through cellophane against water for more than 48
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MOSKOVETS, S. N., et al., USSR Author's Certificate No 302368, filed 19 Jan 70, published 7 Oct 71

hours. The inhibitor is reprecipitated from the dialyzer 2-3 times with 80% ethanol, and then with anhydrous ethanol, washed with an ethanol-ether mixture (1:1), and with ether, and then dried under vacuum.

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UDC 576.858.8:582.264.45.7.094

KOSKOVETS, S. N., MENDZHUL, M. I., ZHIGIR, V. V., NESTEROVA, N. V., and KHIL',
U. S., Institute of Microbiology and Virology, Academy of Sciences Ukrainian
SSR, Kiev

"Morphology of the Lytic Agent of *Chlorella pyrenoidosa* Pringh"

Moscow, Voprosy Virusologii, No 1, Jan/Feb 71, pp 98-100

Abstract: The morphology of the virus producing breakdown of a laboratory culture of *Chlorella pyrenoidosa* strain 82 was studied. Purified lysate products of *C. pyrenoidosa* were found to contain phage-like particles which were uniform in shape and size. They consisted of an isometric capsid 480 Å and a short, tail-like appendage of 110 Å length and 94 Å width. The appendage had a transverse striation, and the shape appeared to be a clearly defined octahedral structure. On a solid medium, the algophage produced negative colonies typical for phage-type viruses. Within 5-7 days, these colonies had a diameter of 2-3 mm.

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1/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--CEMENTING WELLS OF THE WEST SUSNOVKA AREA -U-
AUTHOR--(04)-VEREZHNODY, A.I., NAZARENKO, V.L., MOSKOVKIN, I.V., VOLOSHIN,
A.A.
COUNTRY OF INFO--USSR
SOURCE--GAZOV. PROM. 1970, 15(2), 9
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--PHENOL FORMALDEHYDE RESIN, CEMENT, HARDNESS, WELL DRILLING
MACHINERY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1998/2042 STEP NO--UR/0492/70/015/002/0009/0009
CIRC ACCESSION NO--AP0122271
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0122271

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ADDN. OF 2 WT. PERCENT OF AN AQ.
PHENOL FORMALDEHYDE RESIN SLOWED THE HARDENING, INCREASED THE STRENGTH,
AND REDUCED THE GAS PERMEATION OF THE CEMENT.

UNCLASSIFIED

Acc. Nr.

AP0049776

Abstracting Service:

CHEMICAL ABST. 5-70

Ref. Code:

UA0191

99938q Use of alcohols from wide fractions for preparing unsymmetrical adipates and maleates. Ignatova, G. N.; Puchkova, V. V.; Moskovkina, E. M.; Grishko, N. I.; Balashova, T. S.; Shenskaya, T. N. (USSR). *Plast. Massy* 1970, (1), 17-20 (Russ). Unsym. maleates and adipates, e.g., Bu nonyl maleate, Bu undecyl maleate, maleates from C_{1-11} and C_{1-11} alcs., Bu nonyl adipate, and adipates from C_{1-12} , C_{1-9} , C_{1-11} alcs. were prepd. by a 2-stage procedure. Thus, maleic anhydride and the higher alc. were refluxed (in 1:1.02 molar ratio) at 70-90° without a catalyst, then the lower alc. was added (in a 20% excess) and the mixt. was further refluxed with H_2SO_4 at 140-50°. For unsym. adipates the starting material was adipic acid. The content of the monoester in the reaction mixt. was detd. by ir spectroscopy. The unsym. adipates and maleates were used for the modification of poly(vinyl chloride) (I). Modified I exhibited excellent freeze resistance (to -55°) and good physicochem. properties. CKIR

REEL/FRAME
19801694

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UDC 615.21:547.831.3

MOSKOVKINA, T. V., TILICHENKO, M. N., KURILENKO, V. M., and FEDYAYEVA-BASOVA, L. P., Far Eastern University, Vladivostok, and the Novokuznetsk Scientific Research Chemicopharmaceutical Institute

"In Search of Medicinal Agents in the Hydroquinoline Series"

Moscow, Khimiko-Farmatsevticheskiy Zhurnal, No 3, 1973, pp 3-6

Abstract: For purposes of obtaining new neutropic agents, a number of tetra- and decahydroquinolines were synthesized by reacting 1,5-diketones (prepared by adding cyclohexanone or α , α -dimethyltetrahydro- γ -pyrone to chalcone) with formamide in formic acid (Leuckart reaction). The resultant hydroquinolines were colorless, crystalline substances that formed water-soluble salts with mineral acids. Only one preparation, 1-amino-2,4-diphenyldecahydroquinoline, showed antidepressive properties by preventing reserpine-induced blepharoptosis and hypothermia, and chlorpromazine catalepsy.

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1/3 026

UNCLASSIFIED

PROCESSING DATE--23OCT70

TITLE--SYNTHESIS AND SOME PROPERTIES OF ALPHA, AND BETA, FORMS OF 10,

AMINOPERHYDROACRIDINE -U-

AUTHOR-(02)-MOSKOVKINA, T.V., TILICHENKO, M.N.

COUNTRY OF INFO--USSR

M.

SOURCE--KHIM. FARM. ZH. 1970,4(3), 28-32

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NERVOUS SYSTEM DRUG, AMINE DERIVATIVE, CHEMICAL SYNTHESIS,
ENZYME ACTIVITY, INHIBITION, SEROTONIN, BRAIN, LIVER

CONTROL MARKING--NO RESTRICTIONS.

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1998/0400

STEP NO--UR/0450/70/004/003/0028/0032

CIRC ACCESSION NO--AP0121080

UNCLASSIFIED

2/3 026

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0121080

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. FORM SHOWN ON MICROFICHE.

PERHYDROACRIDINE (I) TREATED WITH DIL. HCL PPTD. THE CHL SALT OF THE ALPHA, ISOMER; THE FILTRATE SATD. WITH NA SUB2 CO SUB3 GAVE THE BETA, FORM. II, III, AND IV WERE PREPD. FROM BOTH FORMS. A BOILING AQ. SOLN. OF I. HCL WITH NANO SUB2 GAVE THE 10, NITROSO DERIVS. AND REDN. YIELDED 10, AMINO DERIVS. THUS WERE PREPD. III (ISOMER, R, PERCENT YIELD, AND M.P. GIVEN): ALPHA, H, MINUS, 89-90DEGREES (ETOH); BETA, H, MINUS, 47-90DEGREES; ALPHA, NO, 90, 87-8DEGREES (LIGROIN); BETA, NO, 80, 65-6DEGREES (LIGROIN); ALPHA, NH SUB2, 84, 81-3DEGREES (LIGROIN); BETA, NH SUB2. HCL, MINUS, 192-3DEGREES (DIOXANE); ALPHA, NH SUB2, 84, 58-9DEGREES (LIGROIN); BETA, NH SUB2. HCL, MINUS, 160-1DEGREES (CHCL SUB3). REACTION OF 10, AMINOPERHYDROACRIDINE WITH ALDEHYDES OR KETONES YIELDED III (ISOMER, R PRIME1, R PRIME2, PERCENT YIELD, AND M.P. GIVEN): BETA, ET, H, 76, 132-3DEGREES (ME SUB2 CO); ALPHA, P, ME SUB2 NC SUB6 H SUB4, H, 65, 187-8DEGREES (ETOH); BETA, P, ME SUB2 NC SUB6 H SUB4, H, 63, 159-60DEGREES (ETOH); BETA, P, MEOC SUB6 H SUB4, H, 83, 149-51DEGREES (ETOH); BETA, 3,4, (METHYLENEDIOXY) PHENYL, H, 79, 157-9DEGREES (ME SUB2 CO); BETA, PHCH:CH, H, 75, 109-11DEGREES (ME SUB2 CO); ALPHA, PHCH:CH, H, 68, 197DEGREES (ETOH); BETA, P, D SUB2 NC SUB6 H SUB4, H, 80, 147-9DEGREES (ETOH); BETA, 5, NITRO, 2FURYL, H, 30, 146-7DEGREES (C SUB6 H SUB14); ALPHA, 5, NITRO, 2, FURYL, H, 85, 70-1DEGREES (DMF); BETA, ME, ME, 90, 47-8DEGREES (DMF).

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UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0121080

ABSTRACT/EXTRACT--REDN. OF III (R PRIME1 EQUALS R PRIME2 EQUALS ME) GAVE 80PERCENT 10, (ISOPROPYLAMINO) DERIV., M. 60-10DEGREES, OF ALPHA, I (HCL SALT M. 217-20DEGREES) AND 75PERCENT BETA, ISOMER, M. 30-2DEGREES; HCL SALT M. 210-14DEGREES (DECOMPN.). REACTION OF II (R EQUALS NH SUB2) WITH (CO SUB2 ET) SUB2 AND ACID CHLORIDES YIELDED IV (ISOMER, R, PERCENT YIELD, AND M.P. GIVEN): ALPHA, ETO SUB2 C, 23, 212DEGREES (ETOH); BETA, ETO SUB2 C, 39, 206-7DEGREES (AQ. ETOH); ALPHA, PH, 70, 297-30DEGREES (ME SUB2 CO); BETA, PH, 60, 257-8DEGREES (DMF); ALPHA, P, H SUB2 NC SUB6 H SUB4, 40, 285-7DEGREES; BETA, P, H SUB 2 NC SUB6 H SUB4, 40, 248-50DEGREES (ETOH); BETA, 3, PYRIDYL, 90, 253-4DEGREES (ETOH). BOTH ISOMERS OF 10, ARINO DERIV. INHIBIT MONOAMINO OXIDASE; ALPHA, FORM BLOCKS THE DECOMPN. OF SEROTONIN IN RAT BRAIN AND LIVER, BETA, FORM ONLY IN THE LIVER. BOTH ISOMERS SHOW NO EFFECT ON SEROTONIN OF MOUSE BRAIN. ALPHA, ISOMER OF 10, (ISOPROPYLAMINO) DERIV. OF LESS ACTIVE AND BETA, FORM COMPLETELY INACTIVE. FACILITY: DAL'NEVOST, UNIV., VLADIVOSTOK, USSR.

UNCLASSIFIED

USSR

UDC 632.95.026

MOSKOVKO, G. I., Candidate of Medical Sciences, Institute for
Specialization of Doctors, Kiev

"Labor Hygiene in Work With Herbicides"

Moscow, Zashchita Rasteniy, No 5, 1970, pp 40-41

Abstract: Herbicides are used widely in agriculture and even though most of them have medium to low toxicity, with exception of 2,4-D, poisoning may occur if the personnel working with them do not adhere to proper precautions. In this paper symptoms of herbicide poisoning are reviewed and proper precautionary measures are listed.

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MOSKOVSKIKH, V.V.

ON THE SPLITTING OF THE P-Q BAND IN THE
IR SPECTRA OF SOME CRESYLPHOSPHATES

A. M. Moshev and V. V. Moskovskikh

Zh. Prikl. Spektrosk. 9, 2 (1968) 235-238
(from Russian)

DRIC Transl. No. 2190 July 1972

Translated by Lt. Col. P. M. Hiles

BR 30215

Nuclear Science and Technology

USSR

UDC 539.125.5.162.2:621.039.512.45

MOSTOVOY, V. I., TRUKHANOV, G. Ya., SAFIN, Yu. A., and MOSKOVSKIY, V. N.

"Analysis of Experiments on Thermalizing Neutrons in a Graphite-Water System"

Moscow, Atomnaya Energiya, Vol 31, No 5, Nov 71, pp 459-464

Abstract: The paper presents an analysis of experimental data on neutron thermalization in a graphite-water system at graphite temperatures of 443-823°K. The initial data for the analysis were provided by experiments conducted over a period of years at the Institute of Atomic Energy imeni Kurchatov. The system studied was comprised of a graphite prism and an aluminium tank full of water separated by heat shields, the neutron spectra being vector fluxes $\phi(z, v, l)$ in the direction perpendicular to the interface, measured at various distances from the temperature discontinuity. The measurements were made by the time-of-flight method. The results are compared with data of calculations of a multigroup kinetic equation. A brief explanation is given of methods of obtaining the first relaxation length and the length of rethermalization from the experimental data. The lengths of relaxation and rethermalization are given for graphite and water at different graphite temperatures. The authors thank L. V. Mayorov for constructive criticism.

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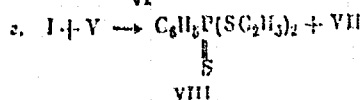
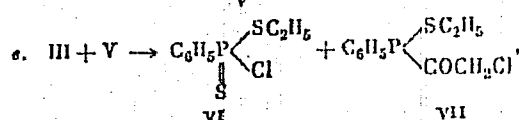
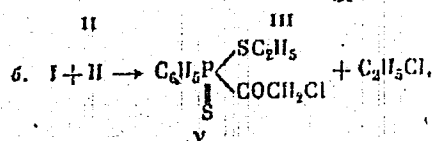
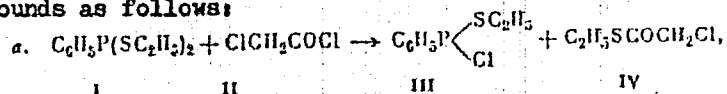
UDC 547.26.118

KRASIL'NIKOVA, YE. A., ORLOVA, G. V., MOSKVA, N. A., and RASUNOV, A. I.,
Kazan Chemical Technological Institute imeni S. M. Kirova

"The Reaction of the Diethyl Esters of Phenylldithiophosphonous Acid with
Chloroacetic Acid Chloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), Vyp 11, 1972 pp 2578-1579

Abstract: The title reaction results in a complex mixture of products.
Products of the initial reaction may react further resulting in the formation
of a number of compounds as follows:



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KRASIL'NIKOVA, YE. A., et al., Zhurnal Obshchey Khimii, Vol 42(104), Vyp 11, 1972, pp 1578-1579

Products were separated on a chromatographic column and analyzed by IR, NMR, and PMR spectra.

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UDC 547.241

USSR

KRASIL'NIKOVA, Ye. A., ~~MOSKVA, N. A.~~, and RAZUMOV, A. I., Kazan' Chemical-
Technological Institute imeni S. M. Kirov

"Reaction of Ethyl Diethylthiophosphinite With Chloroacetic Ester"
Leningrad, Zhurnal Obshchey Khimii, Vol XL, No 12, Dec 70, p 2765

Abstract: The above reaction yields, in addition to the basic product of
the Arbuzov reaction [diethylcarbethoxymethylphosphine sulfide (III)], also
diethylbis(carbethoxymethyl)phosphonium chloride (IV) and ethyl diethyldi-
thiophosphinate (V).

The structure of (III) was confirmed with infrared analysis.

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UDC 547.241

USSR

KRASIL'NIKOVA, YE. A., MOSKVA, N. A., RAZUMOV, A. I., Kazan'
Chemical-Technological Institute imeni S. M. Kirov, Kazan, Ministry
of Higher and Secondary Specialized Education RSFSR

"Study of the Phosphinous and Phosphinic Acid Derivatives. LXXI.
Reaction of the Esters of Diethylthiophosphinous and Diethylphos-
phinous Acids With Acetaldehyde"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 9, Sep 70,
pp 2001-2004

Abstract: The reaction of ethyl esters of diethylthiophosphinous acid (I) and diethylphosphinous acid (II) with acetaldehyde is reported. Both esters react by the same mechanism with acetaldehyde. The reaction is complicated in case of (I) by decomposition of the starting material with the formation of triethylphosphine and the ethyl ester of diethyldithiophosphinic acid. It is proposed that the reaction of ethyl esters of (I) and (II) with acetaldehyde is a nucleophilic replacement reaction probably going through the formation of an intermediate cyclic complex. The proton is split

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KRASIL'NIKOVA, YE. A., et al, Zhurnal Obshchey Khimii, Vol 40,
No 9, Sep 70, pp 2001-2004

off by oxygen or sulfur atoms while the phosphorus atom is attacked by the nucleophilic carbonyl oxygen. As a result, the ester group is removed as an alcohol or a mercaptan. Product identification was made by IR and TLC analysis.

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UDC 547.241 + 547.281.2 + 547.422

USSR

RAZUMOV, A. I., MAYKOVA, A. I., and MOSKVA, V. V., Kazan' Chemical-
Technological Institute imeni S. M. Korov, and Chuvash State University
imeni I. N. Ul'yanov

"Reaction of Diethylchlorophosphine With Cyclic Acetals"

Ivanovo, Khimiya i Khimicheskaya Tekhnologiya, Vol 16, No 10, 1973, pp
1600-1602

Abstract: Cyclic acetals react in a more complex manner with P(III) acid
chlorides than the open acetals. This is due to the fact that a ring may
be opened at various positions of unsymmetric acetals and because of the
various ways in which the intermediate product may react: intra and
intermolecular Arbuzov reaction is possible.

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USSR

UDC 547.241 + 546.185.131

MOSKVA, V. V., ISMAILOV, V. M., NOVRUZOV, S. A., RAZUMOV, A. I., ZYKOVA, T. V., AKHMEDOV, Sh. T., and SALAKHUTDINOV, R. A., Kazan' Chemical Technological Institute imeni S. M. Kirov and Azerbaydzhan State University imeni S. M. Kirov

"Phosphorylation of α,α -Dichlorodiethyl Ether With Phosphorus Pentachloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 9, Sep 73, pp 2085-2086

Abstract: The reaction of α,α -dichlorodiethyl ether with PCl_5 leads to the formation of a complex which upon decomposition yields dichlorophosphoacetic acid trichloride, and β -chloro- β -ethoxyvinylphosphonic acid dichloride in two geometric isomers.

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USSR

UDC 547.341+547.26.118

ISMAILOV, V. M., MOSKVA, V. V., BABAYEVA, T. A., AKHMEDOV, SH. T., RAZUMOV, A. I.,

"Amido Acid Chlorides and Ether Amides of β -Alkoxyvinyl Phosphonic and Thiophosphonic Acids"

Baku, Azerbaydzhanskiy Khimicheskiy Zhurnal, No 2 (84), 1973, pp 52-54

Abstract: Partial amidozation of acid dichlorides of β -alkoxyvinyl phosphonic and thiophosphonic acids leads to obtaining of dialkylamido acid chlorides which with alcohol give ester dialkylamides of β -alkoxyvinyl phosphonic acids. These ester dialkylamides were also obtained by amidizing ether acid chlorides and by alcoholysis of tetraalkyl diamides of these acids. The experimental procedures for synthesizing diethylamides of the acid chloride of β -ethoxyvinyl phosphonic and thiophosphonic acids and the ethyl ester of diethylamide of β -ethoxyvinyl phosphonic acid are given with the yields and other physical and chemical characteristics. A schematic is given for the mutual transformations of the amides, amide acid chlorides, ether acid chlorides and ether amides.

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UDC 547.26.118+547.341

ISMAILOV, V. M., MOSKVA, V. V., BABAYEVA, T. A., AKIMEDOV, SH. T. and RAZUMOV, A. I., Kazan Institute of Chemical Technology imeni Kirov, and Azerbaydzhan State University imeni Kirov

"Mixed Esters and Ester Chloroanhydrides of β -Alkoxyvinylphosphonic and -Thiophosphonic Acids"

Baku, Azerbaydzhanskiy Khimicheskiy Zhurnal, No 4, 1972, pp 47-49

Abstract: Mixed dialkyl and alkylaryl esters of β -alkoxyvinylphosphonic acids were synthesized by reacting ester chloroanhydrides with alcohols (1 mole) or phenol at 0-50°C under a current of dry CO₂ in the absence of HCl acceptor. Treatment of the mixed dialkyl esters with PCl₅ yielded the corresponding chloroanhydrides by substitution of Cl for the different alkoxy groups. Conditions were determined for the substitution of Cl atoms for the alkoxy groups (2 on the P atom and 1 on the C atom) by reacting diethyl- β -ethoxyvinylphosphonate with PCl₅ in CCl₄. At 40-50°C one of the alkoxy groups on the P atom is replaced by Cl giving the appropriate ester chloroanhydride. Reaction of the

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ISMAILOV, V. M., et al., Azerbaydzhanskiy Zhurnal, No 4, 1972, pp 47-49

latter with an additional portion of PCl_5 at $70-80^\circ\text{C}$ results in the corresponding ester chloroanhydride of α -chloro- β -ethoxyvinylphosphonic acid, in which treatment with excess alcohol in the cold replaces one of the Cl atoms on the P atom with an alkoxy group, and on further reaction with PCl_5 at 110°C yields the dichloroanhydride of α -chloro- β -ethoxyvinylphosphonic acid. The above approach may be utilized to replace 2 or 3 of the alkoxy groups with Cl. The resultant chloroanhydrides are readily distilled liquids with a characteristic odor, and are stable on long-term storage in the cold.

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USSR

UDC 547.341 + 546.185'131

ISMAILOV, V. M., ZYKOVA, T. V., MOSKVA, V. V., NOVBUZOV, S. A., RAZUMOV, A. I.,
AKHMEDOV, SH. T., and SALAKHUTDINOV, R. A., Kazan' Chemical-Technological
Institute Imeni S. M. Kirov, and Azerbaydzhan State University Imeni
S. M. Kirov

"Derivatives of Substituted Vinylphosphonic Acids. XVI. Schematic for the
Phosphorylation of Alkylacetates With Phosphorus Pentachloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 6, Jun 73, pp 1247-1250

Abstract: Reactions of phosphorus pentachloride with ethylacetate have been investigated using different reagent ratios. It has been established that the reaction products consist of β -chloro- β -ethoxyvinylphosphonic acid dichlorides and phosphonodichloroacetic acid trichlorides. The first step in this reaction is the replacement of the carbonyl oxygen atom with two chlorine atoms yielding α, α -dichloroethylalkyl ether, which upon dehydrochlorination yields α -chlorovinylalkyl ether. The latter reacts with PCl_5 yielding the final products. On the basis of NMR data, it has been shown that the β -chloro- β -ethoxyvinylphosphonic acid dichloride forms in two geometric isomers.

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USSR

UDC 547.241

RAZUMOV, A. I., LIORBER, B. G., SOKOLOV, M. P., MOSKVA, V. V., NAZVANOVA, G. F., ZYKOVA, T. V., CHEMODANOVA, L. A., and SALAKHUTDINOV, R. A.,
Kazan' Chemical-Technological Institute Imeni S. M. Kirov

"Reactivity and Structures of Phosphorylated Carbonyl Compounds. XI. Study of the Aldol-Enol Equilibrium of Phosphorylated Aldehydes as a Function of Temperature"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 3, Mar 73, pp 568-572

Abstract: The aldol-enol equilibrium of a series of alkyl substituted and non-substituted phosphorylated aldehydes has been investigated as a function of temperature using IR, NMR-¹H and NMR-³¹P spectroscopical analyses. With increasing temperature the nonsubstituted compounds go from the trans-enol form through the aldol form into the cis-enol form. In case of the alkyl substituted phosphorylated aldehyde only the conversion from trans-enol form into the aldol form has been observed. Quantitative determination of the ratios of aldol to trans-enol form has been made.

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USSR

UDC 547.341

ZYKOVA, T. V., MOSKVA, V. V., RAZUMOV, A. I., NAZVANOV, G. F., and
SALAKHUTDINOV, R. A., Kazan' Chemical-Technological Institute Imeni S. M. Kirov

"Derivatives of Substituted Vinylphosphonic Acids. XIV. Study of the Derivatives of Substituted Vinylphosphonic Acids by the NMR-spectroscopic Methods"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), No 9, Sep 72, pp 1913-1916

Abstract: Compounds of the type $RR'P(O)C(X) = CHOC_2H_5$ were studied by high resolution NMR^{31P} and ^{1H} method. The effects of individual atoms have been discussed and the geometric structures of the investigated compounds have been determined. In general, changes in chemical shifts of the phosphorus atom of various derivatives of vinylphosphonic acids are identical to the shifts observed with alkylphosphonic acids. The derivatives of β -alkoxyvinylphosphonic acids have the alkoxy group always in trans position with respect to the phosphorus atom.

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USSR

UDC 547.341 + 546.185'131

ISMAILOV, V. M., MOSKVA, V. V., BABAYEVA, T. A., RAZUMOV, A. I., AKHMEDOV, SH. T., ZYKOVA, T. V., and SALAKHUTDINOV, R. A., Kazan' Chemical-Technological Institute Imeni S. M. Kirov, and Azerbaydzhan State University Imeni S. M. Kirov

"Derivatives of Substituted Vinylphosphonic Acids. XV. Reaction of Phosphorus Pentachloride With α, β -Dichlorovinyl Alkyl Ethers"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 5, May 73, pp 1011-1113

Abstract: It was shown that α, β -dichlorovinyl alkyl ethers react with phosphorus pentachloride in an inert solvent such as benzene or carbon tetrachloride at 0-5° forming a complex which after decomposition with hydrogensulfide yields α, β -dichloro- β -alkoxyvinylphosphonic or thiophosphonic acid dichlorides. The reaction is sensitive to temperature; increased temperature lowers the phosphorylation products and increases the byproducts. Analogous derivatives may be obtained by high temperature chlorination of β -alkoxyvinylphosphonic acid dichlorides.

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USSR

UDC 547.26'118 + 546.185'131

MOSKVA, V. V., BASHIROVA, L. A., RAZUMOV, A. I., ZYKOVA, T. V., and
SALAKHUTDINOV, R. A., Kazan' Chemical-Technological Institute Imeni
S. M. Kirov

"Reaction of Phosphorus Pentachloride With Aldehydes"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 3, Mar 73, pp 677-678

Abstract: It has been shown that a prolonged mixing (5 days) of the
acetaldehyde with phosphorus pentachloride in benzene solution at room
temperature yields α -chloroalkylphosphoric acid dichloride, b.p. 53°/12 mm,
 d_4^{20} 1.4810, n_D^{20} 1.4570. Using chloral in an analogous reaction gives the
dichloroanhydride of $\alpha, \beta, \beta, \beta$ -tetrachloroethylphosphonic acid, b.p. 107°/12 mm,
 d_4^{20} 1.7730, n_D^{20} 1.5006.

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USSR

UDC 547.341

MOSKVA, V. V., NAZVANOVA, G. F., ZYKOVA, T. V., RAZUMOV, A. I., and
SALAKHUTDINOV, R. A., Kazan' Institute of Chemical Technology imeni S. M.
Kirov

"Derivatives of Substituted Vinylphosphonic Acids. XII. nmr Spectra of
 P^{31} and H^1 in Substituted Vinylthionophosphonic and Vinylthionophosphonous
Acid Dichlorides"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(103), No 2, Feb 72, pp 314-317

Abstract: The acid dichlorides of β -ethoxyvinyl- and 1-ethoxy-1-buten-2-
-ylthionophosphonic acids were subjected to reductive desulfurization by
tributylphosphine to produce the corresponding phosphonous acid dichlorides.
Addition of sulfur to these acid dichlorides gives pure substituted vinyl-
thionophosphonic acid chlorides suitable for spectral studies. The nmr
spectra of the P^{31} and H^1 in the given substituted vinylphosphonous and
vinylthionophosphonic acid dichlorides were studied. The geometric structure
of the compounds is determined from nmr data, and the mutual influence of
the tri- and tetracoordination atom of phosphorus with the substituents is
discussed.

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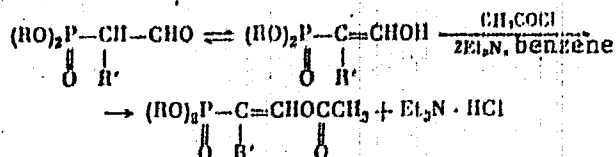
UDC 547.341

MOSKVA, V. V., NAZVANOV, G. F., ZYKOVA, T. V., RAZUMOV, A. I., REMIZOV, A. B., and SALAKHUTDINOV, R. A., Kazan' Institute of Chemical Technology imeni S. M. Kirov

"Derivatives of Substituted Vinylphosphonic Acids. XII. Acylation of Phosphorylated Aldehydes"

Leningrad, Zhurnal Obshchey Khimii, Vol 42(104), No 3, Mar 72, pp 498-501

Abstract: In an attempt to prove keto-enol equilibrium in phosphorylated aldehydes by chemical methods, the authors studied the aldehyde acylation with acetyl chloride in benzene in the presence of triethyl amine, resulting in the synthesis of α -alkyl- β -acyloxyvinylphosphonates from α -phosphorylated propionaldehyde and butyraldehyde.

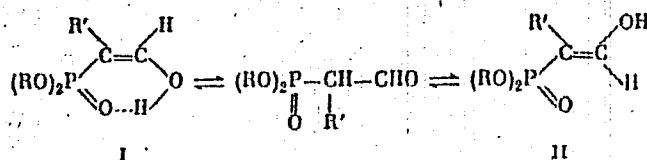


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USSR

MOSKVA, V. V., et al., Zhurnal Obshchey Khimii, Vol 42(104), No 3, Mar 72, pp 498-501

It was found that keto-enol equilibrium with a high concentration of the cis-enol form (I) stabilized by the hydrogen bond between the phosphoryl oxygen and the enol hydroxyl is typical of the starting phosphorylated aldehydes. Spectral data gave no direct proof of the presence of the trans-enol form (II) in the mixture, thus it is only assumed to be present, but in low concentration.



In the products of acylation, nmr spectra show that the phosphorus atom and the alkoxy group are in trans-position relative to the double bond. Since only acylation of the trans-enol form (II) could yield products of such structure, this constitutes chemical proof of its presence. Spectral analysis shows rotational isomerism in α -alkyl- β -acyloxyvinyl phosphonates.

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USSR

UDC 547.341

~~MOSKVA, V. V.~~, BASHIROVA, L. A., and RAZUMOV, A. I., Kazan' Chemico-
Technological Institute imeni S. M. Kirov

"Phosphorylation of Tertiary Alcohols With Phosphorus Pentachloride"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 11, pp 2,577-2,578

Abstract: The reaction of tertiary butyl alcohol with phosphorus pentachloride in benzene led to the formation of an excess of a crystalline complex, which, upon decomposition with SO_2 , yielded β -chloroisobutylphosphonyl dichloride. An analogous reaction between dimethylethylcarbinol and PCl_5 was observed.

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USSR

UDC 547.341

RAZUMOV, A. I., MOSKVA, V. V., NAZVANOVA, G. F., ZYKOVA, T. V.

"Derivatives of Substituted Vinylphosphonic Acids. XI. Deuterated Substituted Vinylphosphonates"

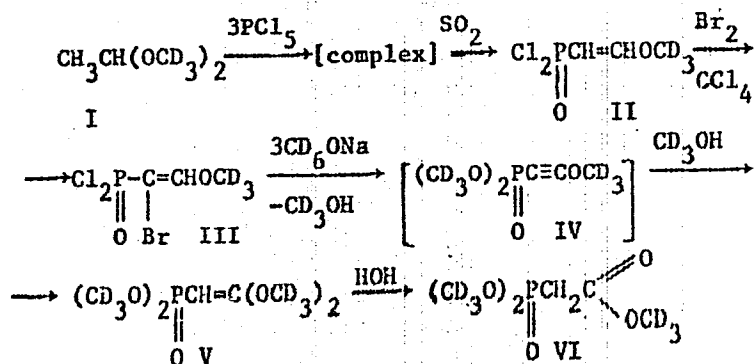
Leningrad, Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 51-53

Abstract: For more complete proof of the structure of phosphorylated ketene acetals and the proposed interaction scheme [V. V. Moskva, et al., *ZhOKH*, No 41, 1495, 1971] including dehydrohalogenation of phosphonate with subsequent addition of alcohol to the alkoxyethynylphosphonate formed, acetaldehyde dimethyl- d_6 -acetal was phosphorylated by phosphorus pentachloride to obtain the deuterated dichloroanhydride of β -methoxy- d_3 -vinylphosphonic acid which was converted to the acid dichloride of α -bromo- β -methoxy- d_3 -vinylphosphonic acid by bromination. The interaction of α -bromo- β -methoxy- d_3 -vinylphosphonate with sodium methylate- d_3 leads to the formation of deuterated phosphonoketene acetal. Paramagnetic resonance spectra are presented confirming the scheme for the given reaction and the structure of all the mentioned products. The successive conversion scheme is represented as follows:

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RAZUMOV, A. I., et al., Zhurnal Obshchey Khimii, Vol XLII (CIV), No 1, 1972, pp 51-53



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USSR

UDC 547.341+547.26'118

MOSKVA, V. V., NAZVANOVA, G. F., ZYKOVA, T. V., RAZUMOV, A. I., and CHEMO-DANOVA, L. A., Kazan' Institute of Chemical Technology imeni S. M. Kirov

"Substituted Vinylphosphonic Acid Derivatives. X. α -Alkyl- β -alkoxy-vinylphosphonic and -thiophosphonic Acid Derivatives"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 8, Aug 71, pp 1680-1684

Abstract: For purpose of a more complete study of α -alkyl- β -alkoxy-vinylphosphonic and -thiophosphonic acid derivatives, dialkyl esters of these acids were synthesized by the reaction of their dichlorides with alcohols in the presence of triethylamine or with alkoxides. Hydrolysis of the esters of α -alkyl- β -alkoxyvinylphosphonic and -thiophosphonic acids (7 percent HCl, 80°, 3 hours) gives corresponding phosphorylated aldehydes, which were identified from elemental analysis, by IR and NMR spectra, as well as in the form of their 2,4-dinitrophenylhydrazones. IR and NMR spectroscopy data indicate the presence of keto-enol tautomerism in the aldehydes.

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USSR

UDC 547.341

MOSKVA, V. V., RAZUMOV, A. I., SAZONOVA, Z. YA., and ZYKOVA, T. V., Kazan'
Institute of Chemical Technology imeni S. M. Kirov

"Reaction of Phosphonoacetic Aldehydes with Secondary Amines"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 8, Aug 71, p 1874

Abstract: The reaction of phosphonoacetaldehydes with secondary amines in toluene in the presence of catalytic quantities of p-toluenesulfonic acid gives β -dialkylaminovinylphosphonates (phosphorylated enamines) in good yields. The structure of the phosphorylated enamines is confirmed by IR and PMR spectral data.

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USSR

UDC 547.341

MOSKVA, V. V., ISMAILOV, V. M., ZYKOVA, T. V., and TAZUNOV, A. I., Kazan'
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"Substituted Vinylphosphonic Acid Derivatives, IX. Study of the Possibility
of Thione-thiol Isomerization of β -Alkoxyvinylthiophosphonic Acid Derivatives"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 8, Aug 71, pp 1676-1679

Abstract: In an earlier article the authors reported that they found no
thione-thiol isomerization in the synthesis of β -alkoxyvinylthionophos-
phonic acid esters. The present article gives additional data, on the basis
of which a thione structure is assigned to the synthesized esters. The
possibility of thione-thiol isomerization was studied in the esters them-
selves, as well as products of their subsequent conversions. For this pur-
pose the diethyl ester of β -ethoxyvinylthionophosphonic acid was compared
with its thiol isomer the O,S-diethyl ester of β -ethoxyvinylphosphonic
acid, obtained by parallel synthesis. The conversion products of these esters
were also compared. The results, as well as IR and NMR spectral and thin-
layer chromatography data confirm the resistance of the reaction products
to thione-thiol isomerization, at least under the conditions of their synthesis
and identification.

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USSR

UDC 547.341+547.381

MOSKVA, V. V., BASHIROVA, L. A., ZYKOVA, T. V., and RAZUMOV, A. I.

"Reaction of Phosphorus Pentachloride With Acrolein Acetals"

Leningrad, Zhurnal Obshchey Khimii, Vol XL, No 12, Dec 70, p 2764

Abstract: The unsymmetrical double bond and acetal group, and the two reaction centers of acrolein acetal (I), can be phosphorylated with phosphorus pentachloride. The reaction is assumed to begin with replacement of the alkoxy group by a halogen, to form the α -chloroallyl ethyl ether (II), which may be either directly phosphorylated by the phosphorus pentachloride, or else isomerized γ -chloro- α -propenyl ethyl ether (III). Owing to some polarization of the double bond in (II) and (III), electrophilic attack is directed in both cases to the β -carbon atom with formation of a single complex, decomposition of which with gaseous sulfur dioxide leads to formation of α -chloromethyl- β -ethoxyvinylphosphonic acid dichloride (V).

Heating of (I) in 80 ml of benzene at 8-10° for 1 hr, followed by addition of phosphorus pentachloride, heating to room temperature, agitation at 30° for 12 hr, decomposition by gaseous sulfur dioxide and finally removal of solvent and volatile products, yielded 65.6% of $C_5H_8Cl_3O_2P$.

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USSR

UDC 547.26'118+547.292'26

GAZIZOV, M. B., SULTANOVA, D. B., MOSKVA, V. V., MAYKOVA, A. I., and
RAZUMOV, A. I.

"Reaction of Diethyl Chlorophosphite With Carboxylic Acid Acylals"

Leningrad, Zhurnal Obshchey Khimii, Vol 41 (103), No 4, Apr 71, pp 932-933

Abstract: Acetic acid acylals react easily with diethyl chlorophosphite yielding a mixture of products consisting of ethyl acetophosphonate, ethyl α -alkoxyethylphosphonate, an α -chloroether, and acetyl chloride.

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USSR

UDC 547.341

MOSKVA, V. V., ZYKOVA, T. V., ISMAILOV, V. M., and RAZUMOV, A. I., Kazan
Institute of Chemical Technology imeni S. M. Kirov

"Substituted Vinylphosphonic Acid Derivatives. IV. Geometric Isomerism in Substituted Vinylphosphonic Acid Dichlorides with One Proton at the Double Bond"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 1, Jan 71, pp 93-95

Abstract: Using the NMR method, the authors studied the acid dichlorides of substituted vinylphosphonic acids containing a proton at the double bond in the α - or β -position, viz. α -chloro- β -ethoxyvinylphosphonic, α -bromo- β -ethoxyvinylphosphonic, α -bromo- β -ethoxyvinylthiophosphonic, β -chloro- β -ethoxyvinyl phosphonic and β -methoxy- α -propenylphosphonic acids. Their geometric structure is assigned on the basis of the NMR spectra.

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USSR

UDC 547.341

MOSKVA, V. V., ISMAILOV, V. M., and RAZUMOV, A. I., Kazan Institute of
~~Chemical Technology~~ imeni S. M. Kirov

"Substituted Vinylphosphonic Acid Derivatives. III. Hydrolysis of β -Alkoxy-
vinylthiophosphonate Esters to the Corresponding Aldehydes"

Leningrad, Zhurnal Obschey Khimii, Vol 41, No 1, Jan 71, pp 90-92

Abstract: Acid hydrolysis of dialkyl esters of β -alkoxyvinylthiophosphonic
acids (5-6 percent HCl, 90-100°, 3-4 hours) gives the corresponding thiophos-
phonoacetaldehydes. These products were identified from constants, elementary
analysis data, IR spectra, as well as by their 2,4-dinitrophenylhydrazones.

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USSR

UDC 547.341

MOSKVA, V. V., ISMAILOV, V. M., ZYKOVA, T. V., and RAZUMOV, A. I., Kazan
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"Substituted Vinylphosphonic Acid Derivatives. V. Alcoholysis of Substituted
Vinylphosphonic and -thiophosphonic Acid Chlorides"

Leningrad, Zhurnal Obshchey Khimii, Vol 41, No 1, Jan 71, pp 96-99

Abstract: The action of alcohols on α -halo- β -alkoxyvinylphosphonic and
-thiophosphonic acid dichlorides in the presence or absence of a tertiary amine
results in the formation of dialkyl esters of these acids. Alcoholysis of
 α -chloro- β -alkoxyvinylphosphonic acid dichlorides in excess ethanol gives
the corresponding full esters, in which the position of substituents at the
double bond is retained. Alcoholysis of β -chloro- β -ethoxyvinylphosphonic
acid dichloride with excess ethanol gives the ethyl ester of diethylphosphono-
acetic acid. The structure of the resultant compounds was proposed on the
basis of IR and PMR spectra.

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USSR

UDC 547.341 + 546.185'131

MOSKVA, V. V., ISMAILOV, V. M., and RAZUMOV, A. I., Kazan' Institute of Chemical Technology imeni S. M. Kirov

"Substituted Vinylphosphonic Acid Derivatives. II. Interaction of Phosphorus Pentachloride With Acetals"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 7, Jul 70, pp 1489-1492

Abstract: The article clarifies an earlier communication by the authors which imprecisely gave the structure of the products resulting from the decomposition of complexes of acetals of acetaldehyde with phosphorus pentachloride by sulfur dioxide. Experiments were repeated many times and IR and NMR spectra were used to identify the reaction products. The interaction of acetals of acetaldehyde with phosphorus pentachloride in benzene or carbon tetrachloride at 5-25° results in the formation of a complex, the subsequent decomposition of which with sulfur dioxide or hydrogen sulfide at 5-10° leads to the formation of β -alkoxyvinylphosphonic and β -alkoxyvinylthiophosphonic acid dichlo-

USSR

MOSKVA, V. V., et al., Zhurnal Obshchey Khimii, Vol 40, No 7, Jul 70,
pp 1489-1492

rides respectively. Thermal decomposition of the acetal-phosphorus pentachloride complex results in the formation of α -chloro- β -alkoxy-vinylphosphonic acid dichlorides. The article suggests a mechanism for the formation of these products.

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USSR

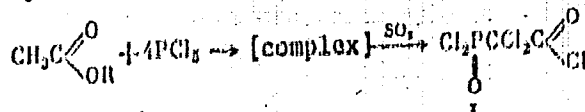
UDC 547.241+546.185'131

ISMAILOV, V. M., MOSKVA, V. V., NOVRUZOV, S. A., RAZUMOV, A. I., AKHMEDOV, SH. T., ZYKOVA, T. V., and SALAKHUTDINOV, R. A.

"Interaction of Phosphorus Pentachloride with Alkyl Acetates"

Leningrad, Zhurnal Obshchey Khimii, Vol XLIII (CV), No 1, 1973, p 212

Abstract: Under mild conditions (neutral solvent, 15-20°), the interaction of phosphorus pentachloride with alkyl acetates takes place with the formation of phosphorylation products, the nature of which depends on the reagent ratio. With a quadruple excess of phosphorus pentachloride, depending on the alkyl radical in the initial esters (R = Me, Et), the basic product can be the trichloranhydride of dichlorophosphonacetic acid (I)



With smaller amounts of phosphorus pentachloride, more complex mixtures of products of phosphorylation are formed in which the proportion of the pro-
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USSR

ISMAILOV, V. M., et al., Zhurnal Obshchey Khimii, Vol XIII (CV), No 1, 1973, p 212

duct (I) decreases with a decrease in the phosphorus pentachloride taken. This indicates that product (I) is the final product of the presented interaction. The experimental procedure for obtaining the product and infrared and other data confirming its structure are presented.

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USSR

UDC 547.341 (2)

RAZUMOV, A. I., SOKOLOV, M. P., LIORBER, B. G., MOSKVA, V. V., SAZONOVA, Z. YA.,
and LOGINOVA, N. G., Kazan' Chemical-Technological Institute Imeni S. M. Kirov

"Synthesis and Properties of Phosphorylated Imines and Enamines"

Leningrad, Zhurnal Obshchey Khimii, Vol 43 (105), No 5, May 73, pp 1019-1026

Abstract: Several methods exist for the synthesis of phosphorylated secondary and tertiary enamines and imines: direct reaction of primary amines with aldehydes, reaction of secondary enamines with phosphorylated aldehydes in presence of p-toluenesulfonic acid, reaction of the diamides of allylphosphorous acid with aldehydes, and transamination of enamines. Imine-enamine tautomerism of these products was studied showing that the position of tautomeric equilibrium depends principally on the nature of substituents at the nitrogen atom and on the type of solvent used. Hydrogen bonding of the enamine forms depends mainly on the substituents at nitrogen and phosphorus atoms and on the steric distribution of proton acceptors.

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USSR

UDC: 531.8

DANIKOV, A. M., STERZHNEV, V. A., MOSKVICH, Ye. G.

"On Determining the Parameters of a Drive With Elastic Constraints"

Tr. Kazan. aviats. in-ta (Works of Kazan' Aviation Institute), 1971, vyp. 138, pp 100-104 (from RZh-Mekhanika, No 7, Jul 72, Abstract No 7A201)

Translation: The article deals with determining the parameters of a drive with elastic constraints. The analysis is based on solution of an identification problem. A method is proposed for constructing a dynamic model of a complex oscillatory controlled system. The coefficients of rigidity and damping of the drive are determined and various problems of drive synthesis are considered on the basis of a comparison of the amplitude frequency characteristics as obtained from the equations of its dynamic model and by digital computer solution of the identification equation in the frequency region. Authors' abstract.

USSR

UDC 661.183

PASECHNIK, V. A., MOSKVICHEV, B. V., and SAMSONOV, G. V.

"Selectivity of the Ion Exchange Processes in Case of Partial Inaccessibility of the Sorption Centers"

Leningrad, Zhurnal Prikladnoy Khimii, Vol 46, No 8, Aug 73, pp 1758-1763

Abstract: Many important ion exchange processes occur under conditions in which some of the sorption centers are inaccessible, so that the sorption exhibits strong non-ideal characteristics. The authors propose a method for calculating thermodynamic functions of similar processes of ion exchange: standard enthalpy and entropy as well as the coefficients of the activity of the components. A theoretical mathematical treatment of the formulae is given with implicit consideration of the effect of inaccessible centers on selectivity.

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USSR

UDC 66.067.38:62-278

SAMSONOV, G. V., ROZHANSKAYA, T. I., MOSKVICHEV, B. V., MARGOLINA, N. A.,
SELEKHOVA, G. B., KOZHEVNIKOVA, P. YE.

"Study of the Permeability of Ultrafiltration Diaphragms"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Khimicheskaya, No 11, 1973,
pp 2589-2592

Abstract: The results are presented from a study of the physical-chemical properties of Soviet anisotropic diaphragms based on cellulose acetate: the permeability and filtration rates as functions of the concentration and pressure gradients and the composition of the solution. The degree of trapping of the material by a given diaphragm depends primarily on the molecular weight of the material. The filtration rate depends on the type of diaphragm, the magnitude of the pressure gradient, the concentration and composition of the filtered solution. The dimensions of the ultrafilter pores are estimated. Integral pore distribution curves with respect to dimensions in the active layer of the membrane are plotted and interpreted. The active layer of the tested diaphragm is characterized predominantly by pores corresponding with respect to permeability to materials with a macromolecule diameter of 20-40 Å. The performed studies make it possible efficiently to select ultrafilters suitable for the concentration of biological preparations of defined molecular weight.

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- 22 -

MOSKVICHEV, I. F.

Зенков Metallurgy

DEVELOPMENT OF MARTENSITIC CONVERSION DURING DEFORMATION AND THE MECHANICAL PROPERTIES OF TRIP STEEL

6.837795

Article by D. P. Moskvichev, L. M. Uteyev, V. N. Zambirskiy, N. A. Zambirskiy, I. P. Borodin, Moscow, Fizika metallov i metallovedeniye. English transl., Vol. 34, No. 5, 1972, submitted 19 October 1971, pp 1075-1087.

UDC 669.15.018.29

A study was made of the interrelation of martensitic conversion during deformation and the structure and mechanical properties of trip steel having different inclination toward the formation of deformation martensite. The effect of the warm work hardening and the test temperature on the capacity for conversion, the structure and mechanical characteristics of trip steel were investigated. The characteristic features of the fine structure of this steel explaining the causes of severe hardening during warm work, hardening of austenite and the increase in the strain hardening coefficient during subsequent tensile testing are described.

A great deal of experimental material accumulated in the Soviet Union and abroad on the laws of martensitic conversions in various alloys and under various conditions have provided a scientific basis for creating a new class of structural steel -- extrastable austenitic complexly alloyed steel (trip steel in the English terminology) hardened by warm work hardening and having high strength with very high plasticity. The latter is insured by the martensitic conversion during plastic flow (testing): the shear mechanism of the carbide martensite in the work hardened austenite, and the formation of the preventing premature necking and rupture. The extraordinary combination of strength and plasticity which cannot be obtained by other known methods of thermal and thermomechanical treatment has in recent years attracted the attention of many researchers to this new class of steel [1-6].

The most complete and efficient utilization of trip steel as a structural material is possible only under the condition of sufficiently comprehensive study of the phase transformations, the structural changes and mechanical behavior of the steel -- in connection with the role of such last important factors as the peculiarities of the composition (the position of the

M₂ point, the inclination toward carbide formation, the capacity for γ-γ₂ or γ-γ₂ martensitic conversion, and so on), the conditions of initial hardening, the mechanical treatment (temperature, degree of work hardening, the deformation divisibility, subsequent aging, and so on) and, finally, the mechanical testing conditions (the temperature and rate conditions primarily).

This article contains a discussion of the results of some studies performed on trip steel of compositions close to those proposed in [1]. Studies were made of the peculiarities of the structural state of the initial work-hardened austenite, the interrelation between the kinetic picture of the martensite to conversion and the formation of the structure of the final conversion products testing and the peculiarities of these tests.

Experimental Procedure and Material

A study was made of two groups of steel — with 0.3 and 0.5 percent C in which the resistance of the austenite to martensitic conversion varied by variation of the manganese content known for its very sharp effect on the position of the M₂ and M₃ points. With sufficiently strict retention of the composition with respect to the other alloying elements (Cr, Ni, Mo, Si) the manganese content varied in the steel with 0.3 percent C from 1.4 to 2.7 percent, and in the steel with 0.5 percent C, from 1.4 to 5.4 percent (Table 1). In order to compensate for the effect of the carbon on the position of the M₂ point, the steel content in the group of steels with 0.3 percent C was reduced.

Table 1
Chemical composition of the investigated steel, percent by weight

N	C	Mn	Cr	Ni	Mo	Si
1	0.32	1.40	9.30	1.30	4.0	2.0
2	0.32	1.41	9.10	1.30	4.1	1.7
3	0.32	1.41	9.10	1.30	4.1	2.0
4	0.32	1.41	9.10	1.30	4.1	2.0
5	0.32	1.41	9.10	1.30	4.1	2.0
6	0.32	1.41	9.10	1.30	4.1	2.0
7	0.32	1.41	9.10	1.30	4.1	2.0
8	0.32	1.41	9.10	1.30	4.1	2.0
9	0.32	1.41	9.10	1.30	4.1	2.0
10	0.32	1.41	9.10	1.30	4.1	2.0
11	0.32	1.41	9.10	1.30	4.1	2.0

The steel was made in a vacuum induction furnace. The ingots (10 kg) were forged into 10 x 10 mm bars — billets under warm work hardening; the billets were subjected to water quenching from 1,150° C and work hardening by rolling at temperatures of T₂ from + 20° to 650° with a different degree of reduction for partial reduction of about 10 percent. Samples were cut from

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ANALYSIS OF THE SPECTRAL COMPOSITION OF THE OUTPUT SIGNAL DURING MODULATION OF A NONLINEAR ACTIVE ELEMENT IN THE PRESENCE OF NONLINEAR STATIC MODULATION CHARACTERISTICS. THE CALCULATION OF THE SIGNAL SPECTRUM IN THE PRESENCE OF DISTORTIONS OF THE MODULATING VOLTAGE IS REPRESENTED IN THE FORM OF A MODULATION BY MULTIPLE FREQUENCIES. ANALYTICAL EXPRESSIONS ARE OBTAINED FOR THE AMPLITUDE COEFFICIENTS OF THE SPECTRUM COMPONENTS IN THE CASE OF AMPLITUDE, FREQUENCY, AND COMBINED AMPLITUDE AND FREQUENCY MODULATION.

FACILITY: MINSKII RADIOTEKHNICHESKII INSTITUT, MINSK, BELORUSSIAN SSR.

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USSR

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KAPSHUKOV, I. I., VOLKOV, Yu. F., MOSKVICHEV, Ye. P., LEBEDEV, I. A., and YAKOVLEV, G. N., Scientific Research Institute of Atomic Reactors, Melekess

"Crystal Structure of Uranyl Tetranitrates"

Moscow, Zhurnal Strukturnoy Khimii, Vol 12, No 1, Jan-Feb 71, pp 94-98

Abstract: The structure of complex uranyl compounds of the type $M_2[UO_2(NO_3)_4]$ was studied, where $M = NH_4, Rb,$ and Cs . All the compounds are isomorphous, monoclinic. The structure of ammonium and rubidium tetranitrouanylates was elucidated by means of three-dimensional diffraction data; the cesium complex was studied by projection. The structure consists of cations M^+ and complex anions $[UO_2(NO_3)_4]^{2-}$. In the centrally symmetric anion complex two nitrate groups are attached to the uranium atom bidentantly and the other two -- monodentantly. In this fashion a hexacoordinated equatorially planar system of oxygen atoms around the uranium is formed. The U-O bond is shortened, being 1.78, 1.77, and 1.85 Å for $NH_4, Rb,$ and CS respectively.

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USSR

UDC 615.371:576.851.49].036.8.074:541.24

MOSKVICHEVA, I. V., DUDKINA, M. I., ZUYEV, A. S., CHERKASOV, A. N., and SHAPIRO, N. I., Leningrad Institute of Vaccines and Sera

"Relationship Between the Immunological Properties of *S. typhi* Antigen Fractions and Their Molecular-Weight Parameters

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 10, 1972, pp 82-86

Abstract: Antigens isolated from *S. typhi* cultures by tryptic proteolysis or by treatment with hydrogen peroxide were characterized by considerable polydispersity. They contained components with diffusion coefficients ranging from $0.45 - 0.6 \times 10^{-7}$ to $10 - 11 \times 10^{-7}$ cm²/sec with mean square radii $[(R_g^2)^{1/2}]$ from 560 - 590 to 30 - 40 Å. The high-molecular-weight fractions of the preparations induced the formation of O and Vi antibodies in high titers; the antigen activity of the low-molecular-weight fractions was 2 to 3 orders lower. The high-molecular-weight fraction of the peroxide preparation also induced the formation of H antibodies. A relationship was observed between the molecular-weight parameters of the antigen preparations and the level of their biological activity (protective properties, toxicity, and antigenic specificity). The high-molecular-weight components exhibited the greatest biological activity in rabbit serum.

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USSR

UDC 615.372:576.851.49].07

SHAPIRO, N. I., VASIL'YEVA, T. G., MOSKVICHEVA, I. V., DUDKINA, M. I., KRUGLIKHINA, Z. M., SAZONETS, G. I., OZERETSKOVSKIY, N. A., BALAYAN, V. D., and KOVAL'SKAYA, S. Ya., Leningrad Institute of Vaccines and Sera and State Control Institute of Medical Biological Preparations imeni Tarasevich, Moscow

"Molecular Heterogeneity of Endotoxins Extracted From the Typhoid-Paratyphoid Group of Bacilli. Report II. Antigenic Structure and Biological Activity of High and Low-Molecular-Weight Fractions"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 11, 1971, pp 35-39

Abstract: By means of sepharose 2B columns, endotoxin extracts from typhoid (4446) and paratyphoid B (50602) bacilli can be separated into a high-molecular-weight and a low-molecular-weight fraction. Components of the latter fraction retain some serological specificity but are nontoxic, exert a low protective activity, and display no stressor activity. On the other hand, components of the high-molecular-weight fraction have a full antigenic structure, are highly immunogenic and toxic, and display pronounced stressor activity. The high-molecular-weight fraction is the carrier of the biological properties of typhoid and paratyphoid endotoxins.

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USSR

UDC 615.372:576.851.49].011.4

SHAPIRO, N. I., VASIL'YEVA, T. G., MOSKVICHEVA, I. V., SAZONETS, G. I., and
REPINA, G. V., Leningrad Institute of Vaccines and Sera

"Molecular Heterogeneity of Endotoxins of Typhoid and Paratyphoid Bacteria.
I. A Method of Fractionation and Some Physicochemical Properties of the
Resulting Fractions"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 10, 1971,
pp 55-59

Abstract: Preparations of *S. typhi* (4446) and *S. paratyphi* B (50602) endo-
toxins obtained by different methods of chemical disintegration of stab
cultures were fractionated by gel filtration on columns of sepharose 2 B
and 4 B. The optical density (at $\lambda=260$ and $280\text{ m}\mu$), carbohydrate and
protein contents were determined in successive samples. The original
preparations were found to be heterogeneous in molecular weight and chemi-
cal composition. A large protein-polysaccharide fraction with a molecular
weight of about 9×10^5 and a polydisperse low-molecular fraction were
isolated from all the preparations. Besides proteins and carbohydrates,
the second fraction contained nucleic acids not present in the first
fraction.
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USSR

UDC 541.49:(546.799.4+546.799.5+546.799.6)

MOSKVIN, A. I.

"Study of Complex Formation of Trivalent Plutonium, Americium, and Curium in Phosphate Solutions"

Leningrad, Radiokhimiya, Vol 13, No 5, 1971, pp 668-674

Abstract: Complex formation of trivalent plutonium, americium, and curium in phosphate solutions was studied by the methods of solubility and ion exchange. Using the first method, solid orthophosphate $\text{PuPO}_4 \cdot x\text{H}_2\text{O}$ was obtained by adding H_3PO_4 to 0.01 M HNO_3 solution containing Pu^{3+} , and its solubility in aqueous solutions was determined at various pH values. The solubility product of $\text{PuPO}_4 \cdot x\text{H}_2\text{O}$ at $\mu = 0.5$ was found to be $4.3 \cdot 10^{-25}$. Using the ion exchange method, the composition and stability constants of the complexes $\text{M}(\text{H}_2\text{PO}_4)^{3-j}$ ($j=1,2-4$) $\text{Cm}(\text{PO}_4)_j^{3-3j}$ ($j = 1$ and 2) were determined. In general in the phosphate solutions the acidocomplexes are formed with various anions of the phosphoric acid. The composition and the relationship between the components is determined by the concentrations of hydrogen ions and of the complexing agent.

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Radiation Chemistry

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UDC 541.49:(546.799.4+546.799.53)

MOSKVIN, A. I.

"Study of Complexation of Trivalent Plutonium and Americium in Acetate Solutions by the Potentiometric Method"

Leningrad, Radiokhimiya, Vol XIII, No 2, 1971, pp 224-230

Abstract: The potentiometric method was used to study the complex formation of trivalent plutonium and americium in acetate solutions. Potentiometric titration curves and plots of the thermodynamic constants as a function of the number of coordinated ligands on the central atom and as a function of the order number of the element are presented. Stability constants, thermodynamic constants and the experimental and calculated potentiometric titration data for solutions containing Pu^{3+} , $NaClO_4$ ($\mu = 1$) and a reducer, and a solution containing Am^{3+} and sodium perchlorate ($\mu = 1$) ($pH_{init} = 1.35$) are presented.

Under the experimental conditions, $Pu(III)$ and $Am(III)$ form acetate complexes with an M:ligand ratio varying from one to six. The concentration (for $\mu = 0.5$ and 1.0) and thermodynamic stability constants of the acetate complexes of $Pu(III)$ and $Am(III)$ were calculated by various mathematical methods of processing the experimental data. A definite regularity in the composition
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MOSKVIN, A. I., Radiokhimiya, Vol XIII, No 2, 1971, pp 224-230

of the acetate complexes of trivalent actinides was found. This regularity is interpreted in the light of modern concepts of the chemical bond theory in complexes.

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UDC 541.49:(546.799.4+546.799.5+546.799.6)

MOSKVIN, A. I.

"Study of Complexation of Trivalent Plutonium, Americium and Curium in Acetate Solutions by the Ion Exchange Method"

Leningrad, Radiokhimiya, Vol XIII, No 2, 1971, pp 221-223

Abstract: The ion exchange method was used to study the complexation of Pu^{3+} , Am^{3+} and Cm^{3+} in acetate solutions under defined concentration conditions in order to identify complexes with a larger number of acetate groups surrounding the central atom. The experimental procedure and methods of mathematical processing of the data are described. Under the investigated experimental conditions, Pu^{3+} and Am^{3+} form acetate complexes with an M:ligand ratio which varies from one to six; this ratio varies from one to four for Cm^{3+} . The concentration stability constants (for μ 0.5 and 1.0) of the acetate complexes of Pu^{3+} , Am^{3+} and Cm^{3+} were calculated. The reliability of the calculations is indicated by agreement of the calculated values of the function $\phi = K_d^0/K_d$ with the experimental values. The research data are also confirmed by data obtained by the potentiometric method [A. I. Moskvina, Radiokhimiya, Vol 13, No 2, 224, 1971]. There is indirect evidence of absence of the effect of such factors as disturbance of constancy of the activity

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MOSKVIN, A. I., Radiokhimiya, Vol XIII, No 2, 1971, pp 221-223

coefficients of the exchanged ions, variation in the viscosity, density and dielectric constant of the investigated solutions on the stability constants. The composition and stability constant data obtained by the ion exchange method are tabulated for seventeen values of the equilibrium pH from 1.60 to 3.10.

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UDC 541.49:(546.791.4+546.799.3+546.799.4)

MOSKVIN, A. I.

"Formation of Complexes of Uranium (IV), Neptunium (IV, VI), and Plutonium (IV, VI) in Acetate Solutions"

Leningrad, Radiokhimiya, Vol 13, No 4, 1971, pp 570-575

Abstract: The ion exchange method was used in studying complex formation of tetravalent uranium, neptunium, and plutonium in acetate solutions. Complex formations of NpO_2^{2+} and PuO_2^{2+} were investigated potentiometrically. In the acetate complexes formed, the ratio of M: acetate varied from 1 to 8. Determination of distribution coefficients of above ions between the cation resin KU-2 and various solutions showed that the absorption of M^{4+} ions on the cation resin decreases with increased concentration of the acetate ion in the solution. At pH 1 used in these experiments, the M^{4+} ions hydrolyze forming MOH^{3+} and MO^{2+} . The order of the tendency to form complexes with acetate ions is as follows: $\text{M}^{4+} > \text{MO}^{2+} \gg \text{MO}_2^{2+} > \text{M}^{3+} > \text{MO}_2^+$. The stability constants of acetate complexes were determined.

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UDC 541.49:(546.799.4)

MOSKVIN, A. M.

"The Complexing of Plutonium^{IV} in Sulfate Solutions"

Moscow, Zhurnal Neorganicheskoy Khimii, Vol XV, No 12, pp 3,368-3,369

Abstract: The author calculates data for determining the stability constant for sulfate complexes of Pu^{IV}, and quotes values for the stability constant of sulfate complexes for seven other metallic ions, as obtained by various authors.

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USSR

MOSKVIN, D. A.

"Local Limit Theorem for Large Deviations in the Case of Differently Distributed Lattice Components"

Teoriya Veroyatnostey i Ee Primeneniya [Theory of Probabilities and its Applications], 1973, Vol 18, No 1, pp 716-722 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V25, by V. Petrov).

Translation: A new local limit theorem for large deviations is produced for sequences of series of random quantities $\{\xi_{nk}; k = 1, \dots, n; n = 1, 2, \dots\}$, independent in each series, taking on only integer values and satisfying the Kramer condition. The arithmetic condition of this theorem is

$$\limsup \frac{1}{n} \sum_{k=1}^n \max_{1 \leq r < h} P(\xi_{nk} \equiv r \pmod{h}) < 1$$

where $h = 2, 3, \dots$

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DUBROVIN, V. T., MOSKVIN, D. A., Veroyatnostn. metody i kiber-
net., vyp. 9, 1971, pp 45-56

spect to each argument t_1, \dots, t_d , and which satisfies the fol-
lowing properties: a) $f(\bar{t})$ is integrable in the Lebesgue sense
on $\bar{\Omega}_d$; b) $\int_{\bar{\Omega}_d} f(\bar{t}) d\bar{t} = 0$, $\int_{\bar{\Omega}_d} |f(\bar{t})| d\bar{t} < \infty$, c) for certain constant A and $\alpha > 0$

$|f(\bar{t}) - f(\bar{t}')| \leq A \|\bar{t} - \bar{t}'\|$, $\bar{t}, \bar{t}' \in \bar{\Omega}_d$, where $\|\bar{t}^2\| = t_1^2 + \dots + t_d^2$,

d).

$$\max_{1 \leq i \leq d} \sup_{0 < h < \delta} \int_{\bar{\Omega}_d} |f(t_1, \dots, t_{i-1}, t_i + h, t_{i+1}, \dots, t_d) -$$

$$- f(t_1, \dots, t_d)|^2 dt_1 \dots dt_d \leq A \left(\ln \frac{1}{\delta} \right)^{-2-\alpha},$$

where A and $\alpha > 0$ are constants.

Let us use the notation

$$F_n(x) = \text{mes} \left\{ \bar{t} : \bar{t} \in \bar{\Omega}_d, \frac{1}{\sigma \sqrt{n}} \sum_{k=1}^n f(\bar{t} W^k) \leq x \right\},$$

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USSR .

UDC: 519.2

DUBROVIN, V. T., MOSKVIN, D. A.

"Concerning Distribution of Fractional Parts of One Class of Transformations of Euclidean Spaces"

Kazan', Veroyatnostn. metody i kibernet.--sbornik (Probability Methods and Cybernetics--collection of works), vyp. 9, Kazan' University, 1971, pp 45-56 (from RZh-Kibernetika, No 10, Oct 72, abstract No 10V55 by V. Petrov)

Translation: Let Ω_d be a d-dimensional torus, and let $\text{mes}(\cdot)$ be an invariant measure on it which, abstracting from the algebraic properties of Ω_d , may be identified with the Lebesgue measure defined on the hypercube

$$\bar{\Omega}_d = \{\bar{t} = (t_1, \dots, t_d), \quad 0 \leq t_1 \leq 1, \dots, 0 \leq t_d \leq 1\}$$

of d-dimensional Euclidean space R^d . Furthermore, let T be an endomorphism of the torus which conserves the measure given by the nondegenerate whole-number matrix $W = \|w_{ij}\|$. Finally, let $f(\bar{t})$ be a real-valued function given on $\bar{\Omega}_d$ which is periodic with re-

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DUBROVIN, V. I., MOSKVIN, D. A., Veroyatnostn. metody i kiber-
net., vyp. 9, 1971, pp 45-46

where

$$\sigma^2 = \lim_{n \rightarrow \infty} \int_{\mathbb{R}^d} \left(\frac{1}{\sqrt{n}} \sum_{k=1}^n f(tW^k) \right)^2 dt.$$

On the assumption that the matrix W satisfies the condition
 $\sup \|tW^{-1}\| = \theta < 1$, $|\det W| = \rho > 1$, the following statements are
proved:

1) If there exists a limit $\sigma^2 = \lim_{n \rightarrow \infty} \int_{-\infty}^{\infty} x^2 dF_n(x)$ and if $\sigma^2 > 0$, then

$$F_n(x) = \Phi(x) + O\left(\frac{1}{1+|x|^{3-\varepsilon}} \cdot \frac{\ln^{\frac{2+\alpha}{4}} n}{n^{1/4}}\right).$$

2) Uniformly relative to x

$$0 \leq x \leq O\left(\frac{n^{1/13}}{\theta(n) \ln^2 n}\right)$$

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DUBROVIN, V. I., MOSKVIN, D. A., Veroyatnostn. metody i kiber-net., vyp. 9, 1971, pp 45-46

the relations

$$1 - F_n(x) = (1 - \Phi(x)) \left(1 + O\left(\frac{(x+1) \ln^2 n}{n^{1/10}}\right) \right),$$

$$F_n(-x) = \Phi(-x) \left(1 + O\left(\frac{(x+1) \ln^2 n}{n^{1/10}}\right) \right),$$

hold for large deviations, where $\Phi(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^x e^{-u^2/2} du$, and the function $\omega(n)$ satisfies the condition $\lim_{n \rightarrow \infty} \omega(n) = \infty$. The given statements are also generalized by the authors to a certain class of "nonlinear" transformations of $\bar{\Omega}_d$.

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UDC: 519.2

MOSKVIN, D. A.

"Large Deviations in the Central Limit Theorem for Stationary Sequences of s-Dependent Quantities and Quantities of the Form $\sum f(t_k)$ "

Kazan', Veroyatnostn. metody i kibernet.--sbornik (Probability Methods and Cybernetics--collection of works), vyp. 9, Kazan' University, 1971, pp 78-93 (from RZh-Kibernetika, No 10, Oct 72, abstract No 10V47 by V. Petrov)

Translation: A stationary sequence of m-dependent random quantities $\{\xi_n; n=1, 2, \dots\}$ is considered such that

$$E\xi_n = 0, \quad \sigma^2 = \lim_{n \rightarrow \infty} \left(\frac{\xi_1 + \dots + \xi_n}{\sqrt{n}} \right)^2 > 0, \quad |\xi_n| \leq M,$$

where M is a constant. Here m may depend on n. Conditions are indicated under which the relation

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MOSKVIN, D. A., Veroyatnostn. metody i kibernet., vyp. 9, 1971, pp 78-93

$$P(\xi_1 + \dots + \xi_n > x \sqrt{n}) = \\ = \frac{1}{\sqrt{2\pi}} \int_x^\infty e^{-\frac{t^2}{2}} dt \left(1 + O\left(\frac{1}{\sqrt{n}}\right) \right).$$

holds in the region $1 \leq x \leq n^{1/6} m^{-7/6} / \rho(n)$, where $\rho(n) \rightarrow \infty$.

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USSR

UDC 681.3.06:51

MOSKVIN, D. A., KHABIBULLIN-YUSHMANOV, Yu. I.

"The Increase in Reliability of Information Processing with Repeated Processing"

"Tr. N-i. i Proyechn. In-ta po Vnedreniyu Vychisl. Tekhn. v Nar Kh-vo [Works of Scientific Research and Planning Institute for Introduction of Computer Equipment to the Economy], No 5, 1970, pp 98-101, (Translated from Referativnyy Zhurnal, Kibernetika, No 10, 1971, Abstract No 10 V762, unsigned).

Translation: A mathematical model is presented for estimation of the reliability of information processing. The criterion in the evaluation is the probability of fulfillment of the inequality $\Delta(B, B^*) < \epsilon$, characterizing the "closeness" of output information B with absolute reliability of the processing unit and output information B* with the actual reliability of its elements. Problems of increasing reliability of information in the unit by implication of processing are studied.

USSR

UDC 519.21

MOSKVIN, D. A., YUDIN, A. A.

"An Analytic Method of Producing Estimates for the Decrease in the Concentration Function of Sums of Independent Random Quantities"

Uch. Zap. Kazn. Un-t, [Scientific Writings of Kazan University], Vol 130, No 3, pp. 41-50, (Translated from Referativnyy Zhurnal Kibernetika, No. 5, 1971, Abstract No. 599 by B. Rogozin).

Translation: For a lattice distribution with maximum probability $p_1 = \sup_{k \in \mathbb{Z}} P\{X=kh+a\}$, an estimate is presented of the maximum probability p_n of n -times convolution of the distribution with itself. $\lim_{n \rightarrow \infty} \sqrt{n} p_n \leq 2\Omega$, where Ω is the solution of the equation $3 \ln \Omega = (1-p_1)\Omega^2$. A similar result is presented for the density-maximum of n -times convolution of the distribution with limited density.

Abstractor's Note. The formulation of the results requires clarification. First of all, in estimating p_n , the quantity $|I_2|$ was not considered, furthermore, the equation $3 \ln \Omega = (1-p_1)\Omega^2$ has two solutions (where $\Omega \geq 0$).

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MOSKVIN, D. A., YUDIN, A. A., Uch. Zap. Kazn. Un-p, Vol 130, No 3, pp. 41-50.

UDC 519.21

$\Omega_1(p_1) \leq \sqrt{e} \leq \Omega_2(p_1)$ where $1 - p_1 \leq 3/2e$; where $1 - p_1 > 3/2e$, this equation has no solutions (where $\Omega \geq 0$). Thus, only where $1 - p_1 \leq 3/2e$, and actually $\lim_{n \rightarrow \infty} \sqrt{n} p_n = 2(\sqrt{e} + 1/\sqrt{e})$, where is the greatest root of equation $3 \ln =$
 $= (1 - p_1)^2$. This note relates to estimation of the density maximum. Where

$$1 - p_1 > 3/2e, \lim_{n \rightarrow \infty} \sqrt{n} p_n < 2(\sqrt{e} + 1/\sqrt{e}).$$

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USSR

UDC 519.214

DUBROVIN, V. T., LADOKHIN, V. I., MOSKVIN, D. A.

"The Central Limit Theorem for Sums of Functions of Independent Quantities"

Uch. Zap. Kazan. Un-t. [Scientific Writings of Kazan' University], Vol 130, No 3, 1970, pp 28-40 (Translated from Referativnyy Zhurnal Kibernetika, No 3, 1971, Abstract No 3 V17 by Yu. Davydov).

Translation: A new proof is presented of two theorems on estimating the residual term in a central limit theorem for functions of independent random quantities, proven earlier by I. A. Ibragimov. (RZhMat, 1968, 5V20).

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MOSKVIN, D. A.

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"Asymptotic Behavior of the Probabilities of Large Deviations of the Sums $\sum_{n=0}^N f(x2^n)$ "

Moscow, Teoriya Veroyatnostey i Yeye Primeneniya; April-June 1970, pp 243-253

Abstract: Large deviations in limit theorems for the sums $\sum_{n=0}^N f(x2^n)$, where $f(t)$ satisfies a Lipschitz condition, are investigated. Satisfactory results are obtained for the restricted neighborhood $[0, o((N/\ln^2 N)^{1/6})]$ and, by a special method, for the neighborhood $[0, o(\sqrt{N})]$ for the particular case $f(t) = \{t\}$.

Two theorems are proven:

I. Let $\Omega(N) \rightarrow \infty$ for $n \rightarrow \infty$. Then for x varying evenly, $0 \leq x \leq N^{1/\Omega(N)}$, there exists the asymptotic equality

$$P\left(\frac{1}{D\sqrt{N}} \sum_{n=0}^{N-1} f(x2^n) > x\right) = (1 - \Phi(x)) \left(1 + O\left(\frac{(x+1)\Omega(N)^{3/2}\sqrt{\ln N}}{\sqrt{N}}\right)\right),$$

$$P\left(\frac{1}{D\sqrt{N}} \sum_{n=0}^{N-1} f(x2^n) < -x\right) = \Phi(-x) \left(1 + O\left(\frac{(x+1)\Omega(N)^{3/2}\sqrt{\ln N}}{\sqrt{N}}\right)\right).$$

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MOSKVIN, D. A., Teoriya Veroyatnostey i Yeye Primeneniya; April-June 1970, pp 243-253

where $\Phi(x) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^x e^{-u^2/2} du.$

II. Let $\Omega(N) \rightarrow \infty$ for $N \rightarrow \infty$. Then for x varying evenly, $0 \leq x \leq (N/\ln^2 N)^{1/2}/\Omega(N)$, there exists the asymptotic equality

$$P\left(\frac{1}{D\sqrt{N}} \sum_{k=0}^{N-1} f(\xi 2^k) > x\right) = (1 - \Phi(x))(1 + R_N(x)),$$

$$P\left(\frac{1}{D\sqrt{N}} \sum_{k=0}^{N-1} f(\xi 2^k) < -x\right) = \Phi(-x)(1 + R_N^*(x)),$$

$$|R_N(x)|, |R_N^*(x)| = O\left(\frac{(x+1)\Omega(N)\sqrt{\ln N}}{\sqrt[4]{N}}\right).$$

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1/2 016
UNCLASSIFIED
PROCESSING DATE--23OCT70
TITLE--THE ELECTROSTATIC TRANSVERSE WELDING OF CONDUCTORS WITH LOCAL
DESTRUCTION OF INSULATION -U-
AUTHOR--(04)-RUDZIT, R.B., BUMBIYERIS, E.V., MOSKVIN, E.G., ZINOVYEV, G.V.
COUNTRY OF INFO--USSR
SOURCE--MOSCOW, SVAROCHNOYE PROIZVOOSTVO, NO 1, 70, PP 26-28
DATE PUBLISHED-----70
SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR
TOPIC TAGS--RESISTANCE WELDING, BIBLIOGRAPHY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1996/2032
STEP NO--UR/0135/70/000/001/0026/0028
CIRC ACCESSION NO--AP0118986
UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0118986

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A STUDY IS MADE OF THE PROBLEMS
DEALING WITH THE RESISTANCE TRANSVERSE WELDING OF THE INSULATED
CONDUCTOR WITH THE NONINSULATED ONE UNDER CONDITIONS OF A COMPLETE
PRESERVATION OF THE INSULATION BEYOND A DIRECT CONTACT BETWEEN PARTS.

UNCLASSIFIED

AA0040689

UR 0482

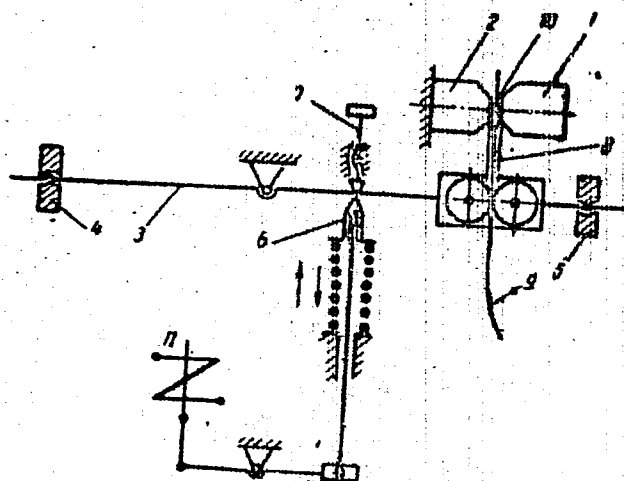
Soviet Inventions Illustrated, Section I Chemical, Derwent, 1-70

241957 CONTACT SOLDERING MECHANISM has solder feed control comprising a double-arm lever (3), with weights (4,5). Tube (8) for solder (9) feed is attached to the lever. The component for soldering (10) is placed between the electrodes (1,2), heat applied, and the lever is pulled down by electromagnet (11), tearing off the required amount of solder.

AUTHORS: Litsis, A. E., Rudzit, R. B.; Moskvin, E. G.; and
Mukhiputdinov, A. L.
Rizhskiy Politekhicheskiy Institut

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30.10.67 as 1194057/25-27. A.E.LITSIS et alia.RIGA
POLYTECHNIC (28.8.69) Bul 14/18.4.69. Class 49h.
Int.Cl.B 23k.

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UR 0482

3-78

Soviet Inventions Illustrated, Section I Chemical, Derwent,

236667 RESISTANCE WELDING of an insulated conductor, 4 crossing a bore conductor 1, uses a copper contact piece 8 to dissipate the heat and prevent damage to the insulation outside the weld. A steady pressure by a deadweight is augmented by a pneumatic shock load when a magnet retracts a latch on a lever and a piston compresses the air in a diaphragm cylinder. The moment when the pulse welding current is switched on it governed by the adjustable position of a micro-switch relative to the lever. 30.10.67. as 1194056/25-27. R.B.RUDZIT et alia. Riga Polytechnic. (17.6.69.) Bul.7/3,2.69. Class 21h. Int.Cl. B23k.

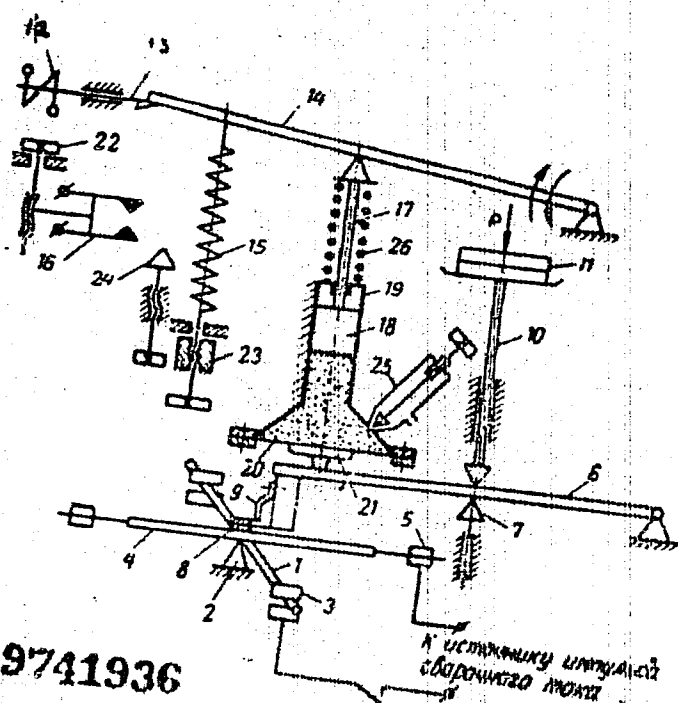
AUTHORS: Rudzit, R. B.; Bumbiyeris, E. V.; Moskvina, E. G.

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Rizhskiy Politekhnikheskiy Institut

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А. И. Сидорова

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USSR

UDC 542.61:621.359.7

MOSKVIN, L. N., and CHERESHKEVICH, YU. L.

"Electrodialysis Through Extraction Membranes. I. Extraction of Pd From Chloride Solutions"

Leningrad, Radiokhimiya, Vol 13, No 5, 1971, pp 768-771

Abstract: It was shown that palladium may be extracted from chloride solutions through extraction membranes under the action of electric current. The rate of extraction is not a simple function of the coefficients of distribution. For example, normally palladium is extracted equally well by tributyl phosphate and n-hexanol from 3N HCl. However, through the extraction membrane almost no palladium is collected by n-hexanol, while tributylphosphate extracts it almost quantitatively. The composition of the starting solution also shows an effect on the extraction through the membrane; the rate of palladium extraction from 3N HCl is about three times that of the rate of extraction from 0.1 N HCl + 0.5 N NaCl.

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1/2 008
UNCLASSIFIED
TITLE--SEPARATION OF CARRIER FREE SELENIUM FROM COMPLEX MIXTURES -U-
AUTHOR--(02)--MOSKVIN, L.N., TSARITSYNA, L.G.
COUNTRY OF INFO--USSR
SOURCE--RADIOKHIMIYA 1970, 12(1), 187-9
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--SELENIUM, COMPLEX COMPOUND, CHROMATOGRAPHY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3005/0117
CIRC ACCESSION NO--AP0132410
STEP NO--UR/0186/70/012/001/0187/0189
UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0132410

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TRACES OF SE IN THE ACID (HBR OR HCL) SOLNS. OBTAINED IN THE DISSOLN. OF Y TARGETS ARE SEPD. BY PASSING THE SOLN. THROUGH AN EXTN. CHROMATGD. COLUMN PACKED WITH POROUS TEFLON, BY USING TRI BUT PHOSPHATE AS THE EXTRACTANT; ANY GE AND AS SORBED IN THE COLUMN ARE BACK EXT. WITH 3N HCL, GA WITH N HSCL, ZN WITH 0.001N HCL, AND THE SE IS FINALLY BACK EXT. WITH CL WATER. IN CASES IN WHICH THE TARGET IS DISSOLVED IN A LARGE VOL. OF ACID, THE SE CAN BE CONCD. IN ADVANCE BY COPPTN. WITH TE. THE SEPN. OF SE FROM THE SOLN. BY VOLATILIZATION AS SE PRIME2 NEGATIVE HYDRIDES IS NOT QUANT.

UNCLASSIFIED

USSR

UDC [669.925:621.735]:620.171

MOSKVIN, N. I., ZHDANOV, V. D., and SHUMRATOVA, G. N.

"A New Material for the Construction of Separators Designed for Aggressive Media"

Moscow, Khimicheskoye i Neftyanoye Mashinostroyeniye, No 2, Feb 73, pp 20-21

Abstract: Data are reported on the mechanical and technological properties of large forging pieces made from titanium alloy AT-6, which were to be used in the production of the components of separator drums. The technology of hot treatment (tempering) of large ingots from AT-6 titanium alloy assures the required mechanical properties of the centrifugal separator components. In the range of tempering temperature -- 1150-850°C -- the technological characteristics of the ingots were found to be adequate. However, to prepare these components from titanium ingots, it was necessary to drop forge the ingots, which improved the reliability and was economically more advantageous.

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1/2 011

UNCLASSIFIED

PROCESSING DATE--23OCT70

TITLE--TNB 2 APPARATUS USED FOR CARBONATE SAPONIFICATION OF OXIDIZED
PARAFFINS IN THE PRODUCTION OF SYNTHETIC FATTY ACIDS -U-
AUTHOR-(05)-YEFIMOV, V.T., NAZARYAN, M.M., MOSKVIN, V.D., BOLOTIN, I.M.,
KOVAL, L.P.

COUNTRY OF INFO--USSR

SOURCE--MASLO-ZHIR, PROM. 1970, 36(3), 21-5

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--CARBONATE, SAPONIFICATION, ALKANE, FATTY ACID, CHEMICAL PLANT
EQUIPMENT, CHEMICAL REACTOR/(U)TNB2 CHEMICAL EQUIPMENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--1997/0550

STEP NO--UR/9085/70/036/003/0021/0025

CIRC ACCESSION NO--AP0119469

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--23OCT70

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CIRC ACCESSION NO--AP0119469

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. OPTIMUM OPERATING PARAMETERS WERE DETERMINED FOR THE TITLE APP. THE APP. CONSISTED OF A MIXER AND A CASCADE OF 4 SEQUENTIALLY CONNECTED REACTORS. THE EFFECTS OF TEMP. OF THE NA SUB2 CO SUB3 SOLN. USED AND OF THE OXIDIZED PARAFFIN, THE CONC. OF THE NA SUB2 CO SUB3 SOLN., THE SAPON. TEMP. OF THE CARBONATE MASS, THE PRODUCTIVITY OF THE APP., AND THE H SUB2 O CONSUMPTION DUE TO MIXING AND CO SUB2 STRIPPING WERE DETERMINED. THE DEPENDENCE OF THE ACID NO. OF THE CARBONATE MASS ON THE RESIDENCE TIME IN THE APP. WAS PLOTTED FOR VARIOUS PARAFFIN-NA SUB2 CO SUB3 RATIOS (1:0.21-0.26) AND TEMPS. (50-100DEGREES). THE NA SUB2 CO SUB3 DECOMPN. RATES AT VARIOUS TEMPS. OF THE OXIDATE AND OF THE NA SUB2 CO SUB3 WERE ALSO DETERMINED. THE APP. DESCRIBED IS THE MOST SUITABLE ONE FOR THE ABOVE CARBONATE SAPON. BECAUSE IT PROVIDES COMPLETE REMOVAL OF CO SUB2 AND A HIGH DEGREE OF NA SUB2 CO SUB3 DECOMPN. FACILITY: KHARKOV. POLITEKH. INST. IM. LENINA, KHARKOV, USSR.

UNCLASSIFIED

USSR

UDC 624.01.46

MEDVED'KO, S. V., Engineer, ~~MOSKVIN, V. M.~~ Doctor of Technical Sciences,
BULGAKOVA, M. G., GUZEYEV, Ye. A., Candidates of Technical Sciences

"Particularities of the Work of Prestressed Elements Under a Prolonged Load
in an Aggressive Medium"

Moscow, Beton i Zhelezobeton, No 1, January 1972, pp 18-30

Abstract: At the Central Corrosion Laboratory of the Central Scientific Research Institute of Concrete and Reinforced Concrete, research is conducted on the influence of the simultaneous action of prolonged loading and an aggressive medium, with high moisture, upon the limit states of prestressed reinforced-concrete elements. Results of research on the bending deformation of prestressed reinforced-concrete elements during their prolonged loading in an aggressive medium are presented. It is shown that under the influence of high moisture, created by the dispersion of a 3% solution of sodium chloride, the moment of crack formation decreases somewhat, the deflections of beams increase with prolonged loading, and residual deformations increase after complete unloading. It is noted that the indicated changes are connected with adsorption strength decrease, and with an increase in the deformability of concrete in the elongated zone of the elements. It is pointed out

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MEDVED'KO, S. V., et al., Beton i Zhelezobeton, No 1, January 1972, pp 13-30

that account must be taken of the particularities of the work of structures in media with high moisture when designing these structures. 4 figures. 1 table. 5 references.

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